Fact Sheet

US Army Engineer
Research and Development Center
Waterways Experiment Station

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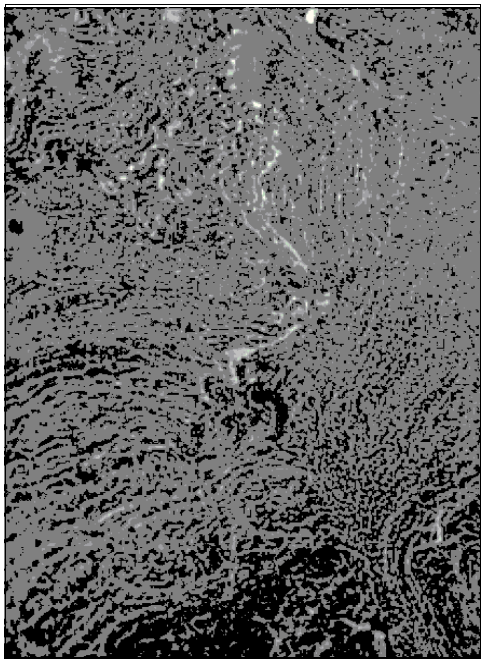
Selection of Polymer-Modified Asphalt Binders

Purpose: Provide guidance in the selection polymer-modified asphalt binders for use in paving applications.

Background: The addition of polymers to asphalts is a burgeoning industry. Many polymers greatly improve the stiffness and flow characteristics of asphalts at high temperatures and are being demonstrated in pavement applications to significantly reduce rutting. These improvements are particularly evident in areas in which low quality aggregates (such as river gravels) are routinely employed in asphalt mixtures. New classes of polymers have become available that are designed to improve the low temperature characteristics of an asphalt and should improve the ability of the pavement to resist low temperature-induced cracking.



Microscopy showing polymer (light areas) distributed in an asphalt

Facts: The polymer chosen for a project must be based on a particular need to solve a problem rather than some expected benefit. A particular polymer used with one asphalt source will likely not yield the same physical properties as the same polymer with a different asphalt source. Of primary importance in the selection of an appropriate polymer is the phase separation characteristics of the asphalt /polymer combination to ensure homogeneity of the binder prior to mixing with aggregate. Phase separation can also have important consequences in the testing of the material. The US Army Engineer Waterways Experiment Station (WES) is fully equipped and staffed to evaluate polymer-modified asphalt binders for paving applications. Our staff consists of engineers, polymer scientists, and trained laboratory personnel who can assess a variety of asphalt/polymer combinations and delineate the specific expected benefits using performance-based engineering properties.

Point of Contact: For more information regarding polymer modification of asphalt binders, contact Dr. Kent Newman at (601) 634-3858 or e-mail at newmanj@wes.army.mil. For more information on WES, visit our web site at http://www.wes.army.mil or http://pavement.wes.army.mil.